



Complete Summary

GUIDELINE TITLE

Specific guidelines for disease - pediatrics.

BIBLIOGRAPHIC SOURCE(S)

Specific guidelines for disease - pediatrics. JPEN J Parenter Enteral Nutr 2002 Jan-Feb;26(1 Suppl):111SA-138SA. [321 references]

COMPLETE SUMMARY CONTENT

SCOPE

METHODOLOGY - including Rating Scheme and Cost Analysis

RECOMMENDATIONS

EVIDENCE SUPPORTING THE RECOMMENDATIONS

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

QUALIFYING STATEMENTS

IMPLEMENTATION OF THE GUIDELINE

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT

CATEGORIES

IDENTIFYING INFORMATION AND AVAILABILITY

SCOPE

DISEASE/CONDITION(S)

- Pediatric malnutrition
- Necrotizing enterocolitis
- Short bowel syndrome
- Liver disease
- Inflammatory bowel disease
- Gastrointestinal pseudo-obstruction
- Intractable diarrhea of infancy
- Pulmonary: bronchopulmonary dysplasia
- Pulmonary: extracorporeal membrane oxygenation
- Chronic renal failure
- Central nervous system disorders
- Cancer and bone marrow transplantation
- Critical care pediatrics
- Cystic fibrosis
- Inborn errors of metabolism
- Solid organ transplantation
- Eating disorders
- Diabetes
- Obesity

GUIDELINE CATEGORY

Evaluation
Management
Screening
Treatment

CLINICAL SPECIALTY

Critical Care
Family Practice
Gastroenterology
Internal Medicine
Nutrition
Pediatrics
Psychology
Surgery

INTENDED USERS

Advanced Practice Nurses
Dietitians
Health Care Providers
Hospitals
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

- To revise the 1993 American Society for Parenteral and Enteral Nutrition Clinical Guidelines so that:
 - The Guidelines are factually up-to-date to reflect current, evidence-based, best approach to the practice of nutrition support
 - The Guidelines support the clinical and professional activities of nutrition support practitioners by articulating evidence-based recommendations upon which to base personal and institutional practices and resource allocation
 - The Guidelines serve as tools to help guide policy makers, health care organizations, insurers, and nutrition support professionals to improve the systems and regulations under which specialized nutrition support is administered
- To assist clinical practitioners who provide specialized nutrition support to patients in all care settings

TARGET POPULATION

Preterm, term infants and children who are at high risk for developing malnutrition as a result of acute or chronic medical illness or prolonged post-operative recovery (i.e., bone, marrow or organ transplantation)

INTERVENTIONS AND PRACTICES CONSIDERED

Screening

1. Nutrition screening

Evaluation

1. Formal assessment of nutritional requirements
 - Indirect calorimetry
2. Oromotor assessment
3. Behavioral feeding assessment
4. Individualized nutrition care plan

Treatment

1. Specialized diet to address nutrition requirements
2. Specialized nutrition support (SNS)
 - Enteral nutrition
 - Parenteral nutrition
 - Stoma placement
 - Gastrostomy
3. Coordinated interdisciplinary approach
4. Intravenous and oral supplements
5. Vitamin supplementation
 - Specialized water miscible multivitamin (cystic fibrosis)
6. Enzyme replacement therapy
7. Dietary counseling
8. Behavioral assessment and counseling
9. Insulin administration (intravenous, subcutaneous)

Management

1. Monitoring and follow-up
 - Weight-height index
2. Pre-operative and post-operative SNS
3. Rehabilitation of oral feeding
4. Discharge planning and follow-up care
5. Home SNS
6. Patient/Care Provider education

MAJOR OUTCOMES CONSIDERED

Safety and efficacy of specialized nutrition support in pediatric patients

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

A modified version of the method used by the Agency for Healthcare Research and Quality (AHRQ), US Department of Health and Human Services was used:

- A. There is good research-based evidence to support the guideline (prospective, randomized trials).
- B. There is fair research-based evidence to support the guideline (well-designed studies without randomization).
- C. The guideline is based on expert opinion and editorial consensus.

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Experts selected for their detailed knowledge and experience in a chosen niche reviewed the primary literature, synthesized and summarized it, and formulated the guideline statements.

In situations where evidence-based recommendations could not be made because of a lack of relevant clinical studies, recommendations are classified as being based on class C data (see the "Rating Scheme for the Strength of Evidence" field) and reflect an attempt to make the best recommendations possible within the context of the available data and expert clinical experience.

Issues Considered During Recommendation Formulation

- A thread running throughout many of the disease-specific guidelines is the rationale for choosing enteral over parenteral specialized nutrition support (SNS) or alternatively parenteral over enteral when a decision to use SNS has been made.
- Another fundamental issue that influenced many of the discussions and recommendations is the relationship between nutrition assessment, nutrition status, malnutrition, and severity of disease.

Refer to the companion document: Guidelines for the use of parenteral and enteral nutrition in adult and pediatric patients. Section I: Introduction. JPEN J Parenter Enteral Nutr 2002 Jan-Feb;26(1 Suppl): 1SA-6SA.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Completed drafts were reviewed by the section editors (the members of the Clinical Guidelines Task Force [CGTF]), edited and/or rewritten, and then reviewed twice by the members of the CGTF as a group. The entire document was then reedited by the CGTF Chair. This four-times-edited draft was submitted to the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) Board of Directors and more than 180 experts in the field of nutrition support (including experts and organizations outside of A.S.P.E.N.) for content, format, and style review. These reviewers were also specifically asked to check each guideline statement for appropriateness, accuracy, and strength of evidence. This review phase stimulated a final cycle of editing by the CGTF and the CGTF Chair. The final document was then approved by the A.S.P.E.N. Board of Directors and submitted to the Journal of Parenteral and Enteral Nutrition for publication.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The strength of the evidence supporting each guideline statement is coded A, B, or C. Definitions of these classifications is provided at the end of the "Major Recommendations" field.

Necrotizing Enterocolitis (NEC)

1. Newborns with NEC are at nutrition risk and should undergo formal nutrition assessment with development of a nutrition care plan. (B)
2. The rate of advancement of enteral nutrition (EN) feeding increments should be kept to less than 35 cc/kg per day to decrease the risk of NEC. (B)
3. Fresh human milk feeding should be encouraged in neonates. (B)
4. Parenteral nutrition (PN) should be initiated in infants when NEC is diagnosed. (B)

Short Bowel Syndrome (SBS)

1. Children with SBS are at nutrition risk and should undergo nutrition screening to identify those who require formal nutrition assessment with development of a nutrition care plan. (B)
2. PN should be initiated as soon as possible postoperatively in patients with SBS. (B)
3. Continuous gastric feedings should be used initially in children with SBS receiving EN. (B)
4. Patients must be monitored for macronutrient and micronutrient deficiencies. (C)
5. A coordinated interdisciplinary team approach should be involved with the management of SBS patients. (B)

Liver Disease

1. Children with liver disease are at nutrition risk and should undergo nutrition screening to identify those who require formal nutrition assessment with development of a nutrition care plan. (B)
2. In patients with chronic cholestatic liver disease, intake of vitamins A, D, E, and K should be supplemented. (B)
3. Medium-chain triglycerides should be given to children with chronic liver disease to promote growth. (B)
4. Preoperative and postoperative specialized nutrition support (SNS) may be beneficial for malnourished children with end-stage chronic liver disease undergoing liver transplantation. (B)

Inflammatory Bowel Disease (IBD)

1. Children with inflammatory bowel disease are at nutrition risk and should undergo nutrition screening to identify those who require formal nutrition assessment with development of a nutrition care plan. (B)
2. EN should be given to children with IBD and growth retardation to help induce a growth spurt. (A)
3. EN should be used as an adjunct to medical therapy in patients with IBD who are unable to maintain their nutrition status with oral intake. (B)
4. PN should be used in children with IBD who are unable to maintain normal growth and development on EN or a standard diet. (B)

Gastrointestinal Pseudo-Obstruction

1. Children with intestinal pseudo-obstruction are at nutrition risk and should undergo nutrition screening to identify those who require formal nutrition assessment with development of a nutrition care plan. (B)

2. Continuous EN in combination with a stoma placed above an isolated dysmotile segment should be considered in patients with pseudo-obstruction unable to tolerate oral feedings. (B)
3. Jejunal-tube feeding should be attempted in children with gastrointestinal pseudo-obstruction who have an intact intestinal migrating motor complex in either the duodenum or the jejunum. (B)

Intractable Diarrhea of Infancy

1. Infants with intractable diarrhea are at nutrition risk and should undergo nutrition screening to identify those who require formal nutrition assessment with development of a nutrition care plan. (B)
2. Continuous EN should be given to children with intractable diarrhea unable to maintain normal nutrition status with oral intake. (B)
3. PN should be given to children with intractable diarrhea unable to maintain normal nutrition status with oral intake and EN. (B)
4. A high-fat, high-MCT containing EN formulation should be given to children with intractable diarrhea who are carbohydrate intolerant. (C)

Bronchopulmonary Dysplasia (BPD)

1. Children with BPD are at nutrition risk and should undergo nutrition screening to identify those who require formal nutrition assessment with development of a nutrition care plan. (B)
2. Infants with BPD should be provided as much as 130 kcal/kg per day to promote growth. (B)

Extracorporeal Membrane Oxygenation (ECMO)

1. Children on ECMO are at nutrition risk and should undergo nutrition screening to identify those who require formal nutrition assessment with development of a nutrition care plan. (B)
2. PN, using the ECMO circuit for access, should be initiated as soon as hemodynamic stability is attained. (B)
3. PN should be administered to ECMO patients to deliver 60 to 90 kcal/kg per day and a maximum of 2.5 g/kg per day protein. (B)
4. EN should be attempted when the ECMO patient is clinically stable. (C)

Chronic Renal Failure

1. Children with chronic renal failure are at nutrition risk and should undergo nutrition screening to identify those who require formal nutrition assessment with development of a nutrition care plan. (B)
2. Oral supplements or SNS should be given to infants and children with renal failure who are not growing normally. (B)
3. Supplemental fluid and sodium should be given to children with polyuric, salt wasting renal disease. (B)
4. Energy intakes for children with chronic renal failure and for those treated with maintenance hemodialysis, or peritoneal dialysis, should be at the recommended daily allowance (RDA) level for chronological age, and modified depending upon the child's response. (C)
5. Vitamin A levels should be monitored closely in children with renal failure. (C)

6. SNS should be given to patients with acute renal failure receiving continuous renal replacement therapies to promote positive nitrogen balance and meet energy needs. (B)

Central Nervous System Disorders

1. Children with neurologic impairment are at nutrition risk and should undergo nutrition screening to identify those who require formal nutrition assessment with development of a nutrition care plan. (B)
2. Protein and energy needs should be targeted according to the neurologically impaired child's estimated energy needs modified by their level of disability and current nutritional deficits. (B)
3. SNS should be initiated in children with neurologic impairment in cases of failure to thrive as determined by growth charts and disease-specific nomograms. (B)

Cancer and Bone Marrow Transplantation

1. Children with cancer are at nutrition risk and should undergo nutrition screening to identify those who require formal nutrition assessment with development of a nutrition care plan. (B)
2. SNS and dietary interventions should be undertaken to promote normal growth and development and to provide for energy requirements in those cancer patients who cannot meet their needs orally. (B)
3. Palliative administration of SNS in terminally ill children with cancer is rarely indicated. (B)

Critical Care Pediatrics

1. Children with critical illnesses are at nutrition risk and should undergo nutrition screening to identify those who require formal nutrition assessment with development of a nutrition care plan. (B)
2. Energy expenditure should be measured serially to determine the energy needs of critically ill children. (B)
3. If indirect calorimetry is not feasible, energy should be provided to critically ill children based on published formulas or nomograms to avoid overfeeding. (B)
4. When SNS is indicated in critically ill children, EN is preferable to PN whenever feasible. (B)

Cystic Fibrosis (CF)

1. Patients with CF are at nutrition risk and should undergo nutrition screening to identify those who require formal nutrition assessment with development of a nutrition care plan. (B)
2. CF patients with exocrine pancreatic insufficiency require enzyme replacement therapy and a water miscible multivitamin specifically designed for CF. (C)
3. Vitamins A, D, E and K serum levels should be monitored annually in CF patients. (B)
4. A weight-height index greater than 90% of ideal should be maintained during periods of rapid growth (infancy and adolescence), pulmonary insufficiency, or infection in CF patients. (C)

5. CF children with a weight-for-height index less than 85% should have dietary intake monitored and undergo behavioral assessment and counseling. (B)
6. SNS should be initiated in children with CF with a weight-for-height index less than 90%. (A)

Inborn Errors of Metabolism

1. Children with inborn errors of metabolism are at nutrition risk and should undergo nutrition screening to identify those who require formal nutrition assessment with development of a nutrition care plan. (B)
2. Adequate nutritional intake in infants and children with inborn errors of metabolism should be assured to support normal growth and minimize neurologic impairment. (B)
3. Many children with inborn errors of metabolism should eat only small amounts of normal foods and often need to rely upon special formulations (medical foods) for most of their needs for calories, protein, trace minerals, and vitamins. (B)
4. Infants and children with inborn errors of metabolism require frequent monitoring of their condition, with appropriate changes in diet to achieve adequate growth and minimize metabolic complications. (B)
5. SNS is required in children with inborn errors of metabolism to maintain growth development and metabolic homeostasis; special attention should be focused on the particular metabolic pathway that is abnormal to assure appropriate, disease specific formula modification. (B)
6. Aggressive nutritional intervention should be used in children with inborn errors of metabolism at times of catabolic stress to prevent metabolic decompensation, severe neurologic complications, and death. (B)

Solid Organ Transplantation

1. Children awaiting solid organ transplants or who have received solid organ transplants are at nutrition risk and should undergo nutrition screening to identify those who require formal nutrition assessment with development of a nutrition care plan. (B)
2. Nutrition support in patients awaiting solid organ transplantation should be used to maximize nutrition status before surgery. (C)
3. After transplantation, patients should receive regular nutrition monitoring and counseling. (C)

Eating Disorders

1. Children with eating disorders are at nutrition risk and should undergo nutrition screening to identify those who require formal nutrition assessment with development of a nutrition care plan. (B)
2. Infants and children with eating disorders should receive an oromotor assessment by an occupational therapist, speech therapist, nurse, or physician with training in pediatric oromotor dysfunction. (B)
3. Infants and children with eating disorders should receive a behavioral feeding assessment by an infant mental health specialist, psychologist, social worker, nurse, or physician with training in the behavioral aspects of infant and child feeding. (B)

4. Infants and children with eating disorders and severe malnutrition (less than 70% ideal weight for height) should receive high-calorie supplemental nutrition, using SNS if necessary. (B)
5. Infants and children requiring nasogastric tube feedings for more than 2 months should be evaluated for gastrostomy tube placement. (B)
6. Infants and children requiring tube feedings for eating disorders should receive the minimum supplemental support necessary to maintain growth and development. (B)
7. A therapeutic plan for rehabilitation of oral feeding should be developed for children with feeding disorders who require feeding via nasogastric or gastrostomy feeding tubes. (C)

Diabetes

1. Children with diabetes mellitus are at nutrition risk and should undergo nutrition screening to identify those who require formal nutrition assessment with development of a nutrition care plan. (B)
2. Blood glucose should be maintained between 100 and 200 mg/dL in hospitalized children with diabetes. (B)
3. If PN is being given, intravenous insulin should be administered starting with 0.1 units of regular human insulin for each gram of dextrose in the infusate. (B)
4. If EN is being given, subcutaneous insulin should be used to maintain the blood glucose level between 100 and 200 mg/dL. (C)

Obesity

1. Obese children are at nutrition risk and should undergo nutrition screening to identify those who require formal nutrition assessment with development of a nutrition care plan.
2. Weight loss should not be a goal for the acutely ill, hospitalized obese child.
3. SNS for the acutely ill, hospitalized child who is obese should be based on actual weight and not energy restricted.

Home Specialized Nutrition Support

1. Children receiving home SNS are at nutrition risk and should undergo nutrition screening to identify those who require formal nutrition assessment with development of a nutrition care plan. (B)
2. SNS should be initiated for the indications appropriate to the underlying disease. (C)
3. Discharge planning and follow-up care for home SNS patients should be interdisciplinary. (C)
4. Education of caregivers for home SNS patients should begin before discharge and continue in the home care setting. (C)
5. SNS, in a home environment, should only be given if patients have caregivers who are willing and able to provide care, and have appropriate community resources to assure a safe environment. (B)
6. Routine monitoring of home SNS should be performed to prevent complications. (C)

Definitions:

Rating Scheme

- A. There is good research-based evidence to support the guideline (prospective, randomized trials).
- B. There is fair research-based evidence to support the guideline (well-designed studies without randomization).
- C. The guideline is based on expert opinion and editorial consensus.

CLINICAL ALGORITHM(S)

Clinical algorithms of the Nutrition Care Process and Route of Administration of Specialized Nutrition Support are provided in the companion document: Nutrition care process. Section II: Nutrition Care Process. JPEN J Parenter Enteral Nutr 2002 Jan-Feb;26(1 Suppl): 7SA-8SA.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of evidence supporting the recommendations is not explicitly stated.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate selection of patients for nutrition screening and appropriate selection of nutritional support for various scenarios in a number of diseases/conditions

For all possible benefits by disease/condition, refer to the original guideline document.

POTENTIAL HARMS

Use of specialized nutrition support in specific diseases/conditions and in certain scenarios may be associated with harms. Refer to the original guideline document for details and a discussion of the literature.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

These American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) Clinical Guidelines are general statements. They are based upon general conclusions of health professionals who, in developing such guidelines, have balanced potential benefits to be derived from a particular mode of medical therapy against certain risks inherent with such therapy. However, the professional judgment of the attending health professional is the primary component of quality medical care. The underlying judgment regarding the propriety of any specific procedure must be made by the attending health professional in light of all of the circumstances

presented by the individual patient and the needs and resources particular to the locality. These guidelines are not a substitute for the exercise of such judgment by the health professional, but rather are a tool to be used by the health professional in the exercise of such judgment. These guidelines are voluntary and should not be deemed inclusive of all proper methods of care, or exclusive of methods of care reasonably directed toward obtaining the same results.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Living with Illness
Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Specific guidelines for disease - pediatrics. JPEN J Parenter Enteral Nutr 2002 Jan-Feb;26(1 Suppl):111SA-138SA. [321 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2002 Jan-Feb

GUIDELINE DEVELOPER(S)

American Society for Parenteral and Enteral Nutrition - Professional Association

SOURCE(S) OF FUNDING

Not stated

GUIDELINE COMMITTEE

Clinical Guidelines Task Force

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Not available at this time.

Print copies: Available from the American Society for Parenteral and Enteral Nutrition (ASPEN), 8630 Fenton St, Suite 412, Silver Spring, MD 20910-3805; (800) 741-8972. For details, please see the [ASPEN Web site](#).

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Guidelines for the use of parenteral and enteral nutrition in adult and pediatric patients. JPEN J Parenter Enteral Nutr 2002 Jan-Feb;26(1 Suppl): 1SA-6SA.
- Nutrition care process. JPEN J Parenter Enteral Nutr 2002 Jan-Feb;26(1 Suppl): 7SA-8SA.
- Errata. JPEN J Parenter Enteral Nutr 2002 Jan-Feb;26(1 Suppl).

Print copies: Available from the American Society for Parenteral and Enteral Nutrition (ASPEN), 8630 Fenton St, Suite 412, Silver Spring, MD 20910-3805; (800) 741-8972. For details, please see the [ASPEN Web site](#).

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on May 5, 2004.

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The logo for FIRST GOV, with "FIRST" in blue and "GOV" in red, separated by a small red star.

